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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,390	03/31/2004	Marcel Gaudet	250312US6 YA	5819

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ALEXANDRIA, VA 22314

EXAMINER

STOUFFER, KELLY M

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,390

Applicant(s)

GAUDET ET AL.

Examiner

Kelly Stouffer

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10-30-06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments, filed 30 October 2006, with respect to the rejection(s) of claim(s) 1-28 under 25 USC 102(b) and 103(a) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made below.

Information Disclosure Statement

The information disclosure statement filed 30 October 2006 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The listing of references in a Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98.

Therefore, the information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-18, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent publication 2004/0168705 to Sun et al. in view of US Patent 5993679 to Koide et al.

Regarding claims 1, 27, and 28, Sun et al. discloses a cleaning method in a plasma processing system comprising introducing a process gas including carbon and oxygen into a process chamber of the plasma processing system (paragraphs 0011-0015), generating a plasma from the process gas (paragraph 0043), exposing residue to the plasma in a dry cleaning process to form a volatile reaction product, and exhausting the reaction product from the process chamber (paragraphs 0039 and 0044). Sun et al. does not use this cleaning process for the entire chamber, but for cleaning metal oxide or organic residues off a substrate (paragraph 0038) specifically copper oxide residue in claim 7 of Sun et al. Koide et al. teaches that copper oxide and other metal oxides can build up on surfaces during deposition processes, and that it is beneficial to clean the entire deposition chamber to remove these residues (column 1 lines 15-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the process of Sun et al. so that it cleans an entire chamber instead of just a substrate as taught by Koide et al. because metal oxides and other materials build up on reactor chamber surfaces. The apparatuses of claims 27 and 28 are shown in Sun et al. Figures 1 and 2.

With regard to claim 2, Figure 1 of Koide et al. shows a waferless cleaning process.

Regarding claim 3, Sun et al. includes the substrate in the process chamber for cleaning (abstract).

Regarding claim 4, Koide et al. discloses cleaning as a result of a deposition process (column 1 lines 15-30) that one of ordinary skill in the art would recognize as having to be repeated after deposition residue build up.

Regarding claim 5, the process gas of Sun et al. may comprise carbon monoxide or carbon dioxide (paragraph 0040).

Regarding claim 6, the process gas of Sun et al. may comprise hydrogen or water (paragraph 0040).

Regarding claim 7, the process gas of Sun et al. may comprise helium or argon (paragraph 0042).

Regarding claims 8-12, the process gas flow rates of Sun et al. are between 1 to 5000 sccm (paragraph 0044).

Regarding claims 13-14, the chamber pressure of Sun et al. is 1 millitorr to 10 torr (paragraph 0044).

Regarding claims 15 and 16, Sun et al. discloses the claimed power ranges of the upper and lower electrodes (antenna and pedestal) in paragraph 0046 and the frequencies in paragraph 0031. The frequencies can go higher than 13.56 MHz in paragraph 0028.

Regarding claims 17 and 18, Sun et al. discloses the process lasting from 5-60 seconds in paragraph 0046.

Art Unit: 1762

Claims 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al. and Koide et al. as applied above, and further in view of US Patent publication 2004/0084409 A1 to Deshmukh et al.

Sun et al. and Koide et al. are discussed above and include the provisions of claims 19-23 except for optically monitoring the cleaning using CO emission. Deshmukh et al. teaches using CO emission at 483 nm to indicate when the residue has been removed and stop cleaning (paragraph 0031).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Sun et al. and Koide et al. to include optically monitoring the cleaning using CO emission as taught by Deshmukh et al. in order to indicate when the residue has been removed and stop cleaning.

Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al., Koide et al., and Deshmukh et al. as applied above, and further in view of US Patent number 5403434 to Moleshi.

Sun et al., Koide et al., and Deshmukh et al. are discussed above, but do not include using mass, particle, or plasma monitoring methods to monitor the cleaning process progress. Moleshi teaches adjusting several parameters including these using a process control computer in order to reduce the cleaning exposure time (column 9 line 18-column 15 line 33).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Sun et al., Koide et al., and Deshmukh et al. to include using mass,

Art Unit: 1762

particle, or plasma monitoring methods to monitor the cleaning process progress as taught by Moleshi in order to reduce the cleaning exposure time.

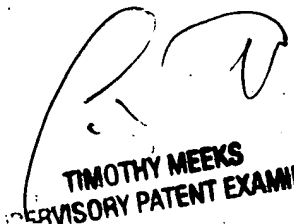
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly Stouffer whose telephone number is (571) 272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer
Examiner
Art Unit 1762


TIMOTHY MEKS
SUPERVISORY PATENT EXAMINER

kms